CLAIMS:

1. A semiconductor processing method of chemical vapor depositing SiO_2 on a substrate comprising:

placing a substrate within a chemical vapor deposition reactor;

feeding an organic silicon precursor into the chemical vapor deposition reactor having the substrate positioned therein under conditions effective to decompose the precursor into SiO_2 which deposits on the substrate and into a gaseous oxide of hydrogen; and

feeding an additional quantity of the gaseous oxide of hydrogen into the reactor while feeding the organic silicon precursor into the reactor.

2. The semiconductor processing method of claim 1, wherein the organic silicon precursor and the additional quantity of the gaseous oxide of hydrogen are fed into the reactor from separate feed streams.

3. The semiconductor processing method of claim 1, wherein the organic silicon precursor and the additional quantity of the gaseous oxide of hydrogen are fed into the reactor from a common feed stream.

4. The semiconductor processing method of claim 1, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture;

converting the liquid mixture to a gaseous mixture; and

feeding the gaseous mixture into the reactor.

5. The semiconductor processing method of claim 1, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture, the quantity of the organic silicon precursor being greater by volume than the quantity of the oxide of hydrogen;

converting the liquid mixture to a gaseous mixture; and

feeding the gaseous mixture into the reactor.

6. The semiconductor processing method of claim 1, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture, the quantity of the oxide of hydrogen comprising between about 5%-15% of the liquid mixture volume;

converting the liquid mixture to a gaseous mixture; and

feeding the gaseous mixture into the reactor.

7. The semiconductor processing method of claim 1, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture;

converting the liquid mixture to a gaseous mixture, the converting step including heating the liquid mixture to a temperature of between about 65° C to 80° C; and

feeding the gaseous mixture into the reactor.

8. The semiconductor processing method of claim 1, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture, the quantity of the organic silicon precursor being greater by volume than the quantity of the oxide of hydrogen;

converting the liquid mixture to a gaseous mixture, the converting step including heating the liquid mixture to a temperature of between about 65° C to 80° C; and

feeding the gaseous mixture into the reactor.

9. The semiconductor processing method of claim 1, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture, the quantity of the oxide of hydrogen comprising between about 5%-15% of the liquid mixture volume;

converting the liquid mixture to a gaseous mixture, the converting step including heating the liquid mixture to a temperature of between about 65° C to 80° C; and

feeding the gaseous mixture into the reactor.

10. The semiconductor processing method of claim 1 wherein the organic silicon precursor is selected from the group consisting of silane, tetraethoxysilane (TEOS), diethylsilane (DES), tetramethylcyclo-tetrasiloxane (TMCTS), fluorotriethoxysilane (FTES), and fluorotrialkoxysilane (FTAS).

11. The semiconductor processing method of claim 1, wherein the chemical vapor deposition reactor is a hot wall reactor.

12. The semiconductor processing method of claim 1, wherein the chemical vapor deposition reactor is a cold wall reactor.

13. A semiconductor processing method of reducing the decomposition rate of an organic silicon precursor in a chemical vapor deposition process of depositing SiO_2 on a substrate within a chemical vapor deposition reactor comprising feeding at least one of H_2O and H_2O_2 into the reactor while feeding the organic silicon precursor.

14. The semiconductor processing method of claim 13, wherein the at least one of H_2O and H_2O_2 is fed into the reactor separately from the organic silicon precursor.

15. The semiconductor processing method of claim 13, wherein the at least one of H_2O and H_2O_2 is injected into the reactor separately from the organic silicon precursor, and comprises less than about 50% by volume of material injected into the reactor.

16. The semiconductor processing method of claim 13, wherein the at least one of H_2O and H_2O_2 is injected into the reactor separately from the organic silicon precursor, and comprises between about 5% to 15% by volume of material injected into the reactor.

17. The semiconductor processing method of claim 13, wherein the at least one of H_2O and H_2O_2 is injected into the reactor separately from the organic silicon precursor, and comprises less than about 5% by volume of material injected into the reactor.

18. The semiconductor processing method of claim 13, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the at least one of H_2O and H_2O_2 in liquid form to form a liquid mixture;

converting the liquid mixture to a gaseous mixture; and

feeding the gaseous mixture into the reactor.

19. The semiconductor processing method of claim 13, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the at least one of H_2O and H_2O_2 in liquid form to form a liquid mixture, the liquid mixture comprising no less than about 0.5% by volume of the at least one of H_2O and H_2O_2;

converting the liquid mixture to a gaseous mixture; and

feeding the gaseous mixture into the reactor.

20. The semiconductor processing method of claim 13, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the at least one of H_2O and H_2O_2 in liquid form to form a liquid mixture, the liquid mixture comprising between about 5% to 15% by volume of the at least one of H_2O and H_2O_2;

converting the liquid mixture to a gaseous mixture; and

feeding the gaseous mixture into the reactor.

21. The semiconductor processing method of claim 13, wherein the organic silicon precursor is selected from the group consisting of silane, tetraethoxysilane (TEOS), diethylsilane (DES), tetramethylcyclotetrasiloxane (TMCTS), fluorotriethoxysilane (FTES), and fluorotrialkoxysilane (FTAS).

22. The semiconductor processing method of claim 13, wherein the chemical vapor deposition reactor is a hot wall reactor.

23. The semiconductor processing method of claim 13, wherein the chemical vapor deposition reactor is a cold wall reactor.

24. A semiconductor processing method of chemical vapor depositing SiO_2 on a substrate comprising:

placing a substrate within a chemical vapor deposition reactor; and

feeding an organic silicon precursor and feeding an oxide of hydrogen into the chemical vapor deposition reactor having the substrate positioned therein under conditions effective to deposit an SiO_2 layer on the substrate.

25. The semiconductor processing method of claim 24, wherein the feeding steps collectively comprise:

mixing a quantity of the organic silicon precursor in liquid form and a quantity of the oxide of hydrogen in liquid form to form a liquid mixture, the liquid mixture comprising less than about 15% by volume of the oxide of hydrogen;

heating the liquid mixture to a temperature sufficient to produce a gas containing at least some organic silicon precursor and at least some oxide of hydrogen; and

feeding the produced gas into the reactor.

26. The semiconductor processing method of claim 24, wherein the volume of material injected into the reactor has no more than about 15% by volume of the oxide of hydrogen.

27. The semiconductor processing method of claim 24, wherein the volume of material injected into the reactor has between about 5% to 15% by volume of the oxide of hydrogen.

28. The semiconductor processing method of claim 24, wherein the volume of material injected into the reactor has between about 0.5% to 5% by volume of the oxide of hydrogen.

29. The semiconductor processing method of claim 24, wherein the organic silicon precursor is selected from the group consisting of: silane, tetraethoxysilane (TEOS), diethylsilane (DES), tetramethylcyclo-tetrasiloxane (TMCTS), fluorotriethoxysilane (FTES), and fluorotrialkoxysilane (FTAS).

30. The semiconductor processing method of claim 24, wherein the chemical vapor deposition reactor is a hot wall reactor.

31. The semiconductor processing method of claim 24, wherein the chemical vapor deposition reactor is a cold wall reactor.

32. A semiconductor processing method of reducing the formation of undesired reaction intermediates in a chemical vapor deposition decomposition reaction of an organic silicon precursor into silicon dioxide within a chemical vapor deposition reactor comprising feeding at least one of H_2O and H_2O_2 into the reactor with the organic silicon precursor.

33. The semiconductor processing method of claim 32 wherein the at least one of H_2O and H_2O_2 is fed into the reactor separately from the organic silicon precursor.

34. The semiconductor processing method of claim 32 wherein the at least one of H_2O and H_2O_2 is first combined with the organic silicon precursor, and then fed into the reactor with the organic silicon precursor.

35. The semiconductor processing method of claim 32, wherein the organic silicon precursor is selected from the group consisting of: silane, tetraethoxysilane (TEOS), diethylsilane (DES), tetramethylcyclotetrasiloxane (TMCTS), fluorotriethoxysilane (FTES), and fluorotrialkoxysilane (FTAS).

36. The semiconductor processing method of claim 32, wherein the chemical vapor deposition reactor is a hot wall reactor.

37. The semiconductor processing method of claim 32, wherein the chemical vapor deposition reactor is a cold hot reactor.

38. A semiconductor processing method of chemical vapor depositing SiO_2 on a substrate comprising:

placing a substrate within a chemical vapor deposition reactor;

mixing a quantity of an organic silicon precursor in liquid form and a quantity of an oxide of hydrogen in liquid form to form a liquid mixture, the organic silicon precursor being selected from the group consisting of: silane, tetraethoxysilane (TEOS), diethylsilane (DES), tetramethylcyclo-tetrasiloxane (TMCTS), fluorotriethoxysilane (FTES), and fluorotrialkoxysilane (FTAS), the oxide of hydrogen being selected from the group consisting of: H_2O and H_2O_2, the quantity of the oxide of hydrogen comprising between about 5%-15% of the liquid mixture volume;

converting the liquid mixture to a gaseous mixture by heating the liquid mixture to a temperature of between about 65℃ to 80℃; and

feeding the gaseous mixture into the reactor.

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